

THAT WHICH IS CLAIMED IS:

1. A system for unified mail routing and sender notification of intermixed mailpieces including letters and flat mail, the system comprising:

a mailpiece feeder to individually feed a
5 plurality of intermixed mailpieces, each of the plurality of intermixed mailpieces having separate receiver location address indicators, sender return address indicators, and sender notification indicators positioned on each mailpiece;

10 a mailpiece transporter positioned adjacent the mailpiece feeder to receive each of the plurality of mailpieces from the mailpiece feeder and transport each therefrom along a predetermined path of travel;

a mailpiece scanner positioned downstream
15 from the mailpiece feeder and adjacent the mailpiece transporter along the path of travel of the plurality of mailpieces to scan the separate receiver location address indicators, sender return address indicators, and sender notification indicators of each of the
20 plurality of intermixed mailpieces to thereby create a single-scan image of address indicators and notification indicator data for each corresponding mailpiece;

a mailpiece labeler positioned downstream
25 from the mailpiece scanner and adjacent the mailpiece transporter along the path of travel of the plurality of mailpieces to label each of the plurality of mailpieces with a preselected routing indicator;

a process controller in communication with
30 the mailpiece scanner and mailpiece labeler to receive
the single-scan image, separate the image into discrete
data groups of at least address indicators and
notification indicator, instruct the labeler to label
each of the plurality of mailpieces with the
35 preselected routing indicator, and generate a sender
notice when desired, the process controller comprising:

a forwarding address determiner
responsive to the receiver location address
indication data group of each of the
40 plurality of mailpieces to determine when the
receiver address of a corresponding mailpiece
corresponds to one of a list of forwarding
address indicators and thereby instruct the
labeler to label the mailpiece with the
45 corresponding forwarding address indicator,

a return-to-sender determiner responsive
to the sender return address indication data
group of each of the plurality of mailpieces
to determine when a corresponding mailpiece
50 is to be returned to sender and thereby
instruct the labeler to label the mailpiece
with the corresponding return address
indicator, and

a sender notification determiner
55 responsive to the sender notification
indicator data group of each of the plurality
of mailpieces to determine when to generate a
sender notice; and

a mailpiece stacker positioned downstream
60 from the mailpiece transporter to receive each of the
plurality of the intermixed mailpieces from the
mailpiece transporter and to direct each of the
mailpieces to one of a plurality of preselected
stacking positions.

65 2. A system as defined in Claim 1 wherein
the system further comprises a reverse side imager
positioned to image a sender return address indicator
located on a second side of each of the plurality of
intermixed mailpieces and to interpose the image into
70 the single-scan image of address and notification
indicators located on the opposing side of each of the
plurality of intermixed mailpieces as created by the
mailpiece scanner so as to create a single data image
including receiver location address indicator, sender
75 return address indicator, and sender notification
indicator data.

3. A system as defined in Claim 2 wherein
the reverse-side imager includes at least one mirror
positioned adjacent the mailpiece transporter to
thereby reflect mirror images of return address
5 indicators located on the second side of each
corresponding mailpiece to the scanner.

4. A system as defined in Claim 3 wherein
the process controller further comprises a reverse
image translator responsive to the reverse-side imager
to re-orient the reflected mirror images so that the
5 single-scan image corresponds substantially to the

return address indicator as it appears positioned on the mailpiece.

5. A system as defined in Claim 4 wherein the process controller further comprises an additional processing mailpiece processor responsive to the scanner to detect which mailpieces require additional processing and to instruct the labeler to label each mailpiece requiring additional processing before mail routing with a reprocessing indicator uniquely identifying the corresponding mailpiece for subsequent additional processing.

6. A system as defined in Claim 5 wherein the process controller further comprises a data receiver positioned to receive system-user-supplied data for each mailpiece having located thereon a unique reprocessing indicator and associate the received data with the unique reprocessing indicator so as to identify during a subsequent reprocessing each mailpiece having a reprocessing indicator and to instruct the mailpiece labeler responsive to the identification of the reprocessing indicator to label the mailpieces with the system-user-supplied data corresponding to the unique reprocessing indicator.

7. A system as defined in Claim 6 wherein the process controller further comprises an image storer for storing images of receiver forwarding address indicators and sender return address indicators.

8. A system as defined in Claim 7 wherein the mailpiece labeler includes a stored address image

labeler responsive to the process controller to label a
mailpiece with a stored image of a return address
5 indicator.

9. A system as defined in Claim 8 wherein
the mailpiece labeler further includes a stored notice
image labeler responsive to the process controller to
label a mailpiece with a stored image of a sender
5 notice.

10. A system as defined in Claim 1 wherein
the mailpiece transporter comprises a mailpiece
conveyor driven by a fixed speed motor responsive to a
mailpiece size sensor and system controller so as to
5 feed mailpieces at rates determined by mailpiece size
and to thereby process letter-sized mailpieces at a
predetermined speed and flat mail-sized mailpieces at a
different speed.

11. A system as defined in Claim 10 wherein
the size of the mailpiece stackers can be adjusted in
height in response to the mailpiece size sensor to
accommodate letter-sized mailpieces and flat mail-sized
5 mailpieces so as to permit both being processing on the
system.

12. A system as defined in Claim 11 wherein
the mailpiece transporter further comprises two
vertical pinch belts each movably mounted between a
plurality of spaced-apart rollers driven by the
5 conveyor motor and extending substantially parallel to
one another along the predetermined path of travel and
wherein the feeder includes a vacuum assistor to assist
in transporting individual mailpieces that comprise two

or more separate pages bound together at their
10 respective margins so as to define a magazine.

13. A system as defined in Claim 11 wherein the vertical pinch belts is are driven by the plurality of spaced-apart rollers at a speed at least 35 inches per second.

14. A system as defined in Claim 1 wherein the mailpiece scanner has a resolution of about 250 dots per inch to scan fonts commonly used for preprinted return addresses on mailpieces.

15. A system as defined in Claim 1 wherein the process controller further comprises an image sizer to adjust the size of a sender notice to fit completely and legibly within the parameters of a
5 mailpiece surface having a predetermined size and on which is located a sender address indicator along with a postage-due notice.

16. A system as defined in Claim 1 wherein the mailpiece labeler includes a multiline printer positioned to selectively print either an address indicator on a label on a mailpiece or a sender notice
5 on a mailpiece by printing simultaneously at least three lines to permit indicators and notices to be printed as a mailpiece traverses the path of travel by the mailpiece transporter in a single pass.

17. A system as defined in Claim 1 wherein the scanner further comprises a cover sheet imager to scan an exposed page of a multipage mailpiece comprising a plurality of pages bound together at the

- 5 page margins and to thereby create a single-scan image of the exposed page of the corresponding mailpiece.

18. A system as defined in Claim 17 wherein the process controller further comprises a multipage mailpiece sender identifier to match the single-scan image of the exposed page of a multipage mailpiece with
5 a corresponding image in a collection of images and attributes of exposed pages of preselected multipage mailpieces and to thereby identify a sender address indication corresponding to the single-scan image.

19. A system as defined in Claim 18 wherein the system further comprises a multipage mailpiece sender notifier responsive to a match made by the multipage mailpiece sender identifier to thereby cause
5 the mailpiece labeler to position a sender notification and sender address indicator on the exposed page of a corresponding multipage mailpiece.

20. A system for unified handling and routing of intermixed mailpieces including letters and flat mail, the system comprising:

a mailpiece feeder to individually feed a
5 plurality of intermixed mailpieces, each of the plurality of intermixed mailpieces having separate receiver location address indicators and sender return address indicators positioned on each mailpiece;

a mailpiece transporter positioned adjacent
10 the mailpiece feeder to receive each of the plurality of mailpieces from the mailpiece feeder and transport each therefrom along a predetermined path of travel;

a mailpiece scanner positioned downstream from the mailpiece feeder and adjacent the mailpiece

15 transporter along the path of travel of the plurality
of mailpieces to scan the separate receiver location
address indicators and sender return address indicator
of each of the plurality of intermixed mailpieces to
thereby create a single-scan image of address
20 indicators data for each corresponding mailpiece;
a mailpiece labeler positioned downstream
from the mailpiece scanner and adjacent the mailpiece
transporter along the path of travel of the plurality
mailpieces to label each of the plurality of mailpieces
25 with a preselected routing indicator;
a process controller in communication with
the mailpiece scanner and mailpiece labeler to receive
the single-scan image, separate the image into discrete
data groups and instruct the labeler to label each of
30 the plurality of mailpieces with the preselected
routing indicator, the process controller comprising:
a forwarding address determiner
responsive to the receiver location address
indication data group of each of the
35 plurality of mailpieces to determine when the
receiver address of a corresponding mailpiece
matches one of a list of receiver forwarding
address indicators and thereby instruct the
labeler to label the mailpiece with the
40 corresponding receiver forwarding address
indicator,
a return-to-sender determiner responsive
to the sender return address indication data
group of each of the plurality of mailpieces
45 to determine when a corresponding mailpiece
is to be returned to sender and thereby
instruct the labeler to label the mailpiece

with the corresponding return address indicator.

21. A system as defined in Claim 20 wherein the process controller further comprises a forwarding notification generator responsive to a sender notification indicator positioned on a mailpiece to
5 generate an image of the corresponding location address indicator, forwarding address indicator and return address indicator and instruct the mailpiece labeler to label a separate mailpiece with the corresponding image of location address indicator, forwarding address
10 indicator, and sender return address indicator so as to generate a mailpiece to be sent to the sender indicating the forwarding address corresponding to the receiver location address.

22. A system as defined in Claim 21 wherein the forwarding notification generator further comprises an image storer to store single-scan images generated by the mailpiece scanner comprising the location
5 address indicator, forwarding address indicator, and return address indicator.

23. A system as defined in Claim 22 wherein the forwarding notification generator further comprises an image sizer to generate images sized to fit within preselected dimensions of an area space so as to be
5 positioned on a mailpiece having a preselected size.

24. A system as defined in Claim 23 wherein the forwarding notification generator further comprises a postage due report generator for summing the number of mailpieces to be sent to senders indicating the

- 5 forwarding address corresponding to corresponding receiver location addresses and computing the total postage due thereon.

25. A system as defined in Claim 24 wherein the process controller includes an optical character reader to compare the single-scan image with a preselected set of receiver location address indicators
5 each having a corresponding forwarding address indicator so as to determine the forwarding address indicator to appear on the system-labeled mailpiece to be forwarded to the address indicated by the forwarding address indicator.

26. A system as defined in Claim 25 further comprising at least one remote site destination printer in communication with the process controller for printing indicia on a selected indicia carrier.

27. A system as defined in Claim 26 wherein the process controller further comprises a reason-for-return notification generator responsive to the return-to-sender determiner to instruct the mailpiece labeler
5 to label a mailpiece to be returned to sender with an indicator indicating the reason for the return selected from a list of different reasons for returning the mailpiece to the sender.

28. A system as defined in Claim 27 wherein the system further comprises a reverse side imager to image a sender return address indicator positioned on a second side of each of the plurality of intermixed
5 mailpieces and to interpose the image into the single-scan image of address and notification indicators

positioned on the opposing side of each of the plurality of intermixed mailpieces as created by the mailpiece scanner so as to create a single data block
10 image comprising receiver location address indicator, sender return address indicator, and sender notification indicator data.

29. A system as defined in Claim 28 wherein the reverse side imager is a mirror positioned adjacent the mailpiece transporter to thereby reflect mirror images of return address indicators positioned on the
5 second side of each corresponding mailpiece to the scanner.

30. A system as defined in Claim 29 wherein the process controller further comprises a reverse image translator to re-orient the reflected mirror images so that the single-scan image corresponds
5 substantially to the return address indicator as it appears positioned on the mailpiece.

31. An system for unified mail routing and sender notification of a plurality of mailpieces including letters and flat mail, the system comprising:
a mailpiece transporter comprising:
5 a mailpiece conveyor to convey each of the plurality of mailpieces along a predetermined path of travel,
a mailpiece receiver positioned upstream from the mailpiece conveyor and downstream
10 from the mailpiece feeder at the initial point of the path of travel from the mailpiece feeder to receive each mailpiece

for subsequent conveyance along a preselected path of travel, and

15 a mailpiece dispenser positioned downstream at the terminal point of the path of travel to dispense each mailpiece; imaging means positioned adjacent the mailpiece transporter and comprising receiver location
20 address indicator imaging means and sender return address indicator imaging means for generating single-scan electronic images of receiver location address and sender return address indicators positioned on each mailpiece;

25 labeling means positioned adjacent the mailpiece transporter downstream from said imaging means along the preselected path of travel for labeling each of the plurality of mailpieces with a preselected routing indicator; and

30 processing means in communication with the imaging and labeling means for receiving the single-scan images, separating each image into discrete data groups of at least address indicators, and instructing the labeling means to label each of the plurality of
35 mailpieces with the preselected routing indicator, the processing means comprising:

 forward addressing means responsive to the location address indication data group of each of the plurality of mailpieces for
40 determining when the receiver address of a corresponding mailpiece corresponds to one of a list of forwarding addresses and thereby instructing the labeling means to label the mailpiece with the listed forwarding receiver
45 address; and

return-to-sender addressing means responsive to the address indication data group of each of the plurality of mailpieces to determine when a corresponding mailpiece is to be returned to sender and thereby instructing the labeling means to label the mailpiece with a corresponding sender return address.

32. An system as defined in Claim 31 wherein the processing means further comprise reprocess coding means for detecting mailpieces requiring additional processing and instructing the labeling means to label said mailpieces with reprocessing indicators identifying the said mailpieces for subsequent additional processing.

33. An system as defined in Claim 32 wherein the processing means further comprises supplementary data receiving means responsive to data supplied by a system user for receiving user-supplied data and matching the data to a unique reprocessing indicator.

34. An system as defined in Claim 33 wherein the processing means further comprises sender notification indicating means responsive to sender notification indicators positioned on a mailpiece for identifying a sender notification request requesting that the corresponding sender of a mailpiece be notified when the mailpiece is forwarded to an address different from that of the receiver location address indicator, generating and saving an image comprising the receiver location address indicator, the forward-

addressing-means-determined forwarding address indicator, and sender return address indicator.

35. An system as defined in Claim 34 further comprising sender notification generating means responsive to the sender notification indicating means for positioning the image generated by the sender
5 notification generating means to a separate mailpiece for subsequent notification to the sender that the corresponding mailpiece is to be forwarded to the forwarding address indicator.

36. An system as defined in Claim 35 further comprising image sizing means for adjusting the dimensions of the images generated by the sender notification indicating means so as to fit within
5 preselected dimensions of a mailpiece having a preselected size.

37. An system as defined in Claim 36 wherein the processing means further comprises postage-due reporting means for summing the number of mailpieces to be sent to senders indicating the forwarding address
5 corresponding to corresponding receiver location addresses and computing the total postage due thereon.

38. An system as defined in Claim 37 wherein the processing means includes optical character reading means for optically reading characters of the single-scan image and comparing the characters with a
5 preselected set of receiver location address indicators each having a corresponding forwarding address indicator so as to determine the forwarding address indicator to appear on the corresponding mailpiece to

be forwarded to the address indicating the forwarding
10 address indicator.

39. An system as defined in Claim 38 wherein
the processing means further comprises a reason-for-
return notification means responsive to the return-to-
sender addressing means for instructing the mailpiece
5 labeler to label a mailpiece to be returned to sender
with an indicator indicating the reason for the return
selected from a list of different reasons for returning
the mailpiece to the sender.

40. An system defined in Claim 39 wherein
the system further comprises reverse side imaging means
for imaging a sender return address indicator
positioned on a second side of each of the plurality of
5 intermixed mailpieces and to interpose the image into
the single-scan image of address and notification
indicators positioned on the opposing side of each of
the plurality of intermixed mailpieces as created by
the mailpiece scanner so as to create a single data
10 block image comprising receiver location address
indicator, sender return address indicator, and sender
notification indicator data.

41. An system as defined in Claim 40 wherein
the reverse side imaging means includes mirroring means
positioned adjacent the mailpiece transporter for
reflecting mirror images of return address indicators
5 positioned on the second side of each corresponding
mailpiece to the mailpiece scanning means.

42. An system as defined in Claim 41 wherein
the processing means further comprises reverse image

translating means for re-orienting the reflected mirror images so that the single-scan images correspond
5 substantially to the return address indicators as each appears positioned on the mailpiece.

43. An system as defined in Claim 31 further comprising no-forwarding processing means for notifying mailpiece senders whose non-deliverable mailpieces cannot be forwarded and cannot be returned to the
5 senders.

44. An system as defined in Claim 43 wherein the no-forwarding processing means further comprises exposed page imaging and labeling means for imaging the exposed page of a mailpiece having no sender return
5 address indicator positioned thereon, labeling the image and storing the labeled image.

45. An system as defined in Claim 44 wherein the no-forwarding processing means further comprises stored image comparison means for comparing each labeled image stored with a set of preselected images,
5 each preselected image having a corresponding return address indicator, to thereby identify a match between the stored image and one of the preselected images and to instruct the mailpiece labeling means to label a separate mailpiece with the corresponding return
10 address indicator.

46. A system as defined in Claim 45 further comprising at least one remote site destination printer in communication with the process controller for printing indicia on a selected indicia carrier.

47. An system as defined in Claim 46 further comprising off-line processing means for allowing a system user to enter data identifying the return address indicator for corresponding mailpieces for which there is no match between the mailpiece's corresponding stored image and one of the preselected images.

48. A method for unified forwarding of mail and notifying sender, the method comprising the steps of:

generating electronic images of receiver location address indicators and sender return address indicators positioned on each of a plurality of mailpieces;

determining a corresponding receiver forwarding address indicator by searching for a match between each receiver location address indicator and a corresponding receiver forwarding address indicator for each mailpiece by making an electronic comparison between the generated electronic image and a preselected set of corresponding forwarding address indicators;

searching for the presence of a sender notification indicator positioned on each mailpiece;

generating a forwarding address indicator on each mailpiece having a match between the receiver location address indicator and the receiver forwarding address indicator; and

generating and storing a sender notification for each of the plurality of mailpieces having positioned thereon a sender notification indicator, the sender notification including the receiver location

address indicator, receiver forwarding address indicator, and sender return address indicator.

49. A method as defined in Claim 48 wherein a unique indicator is positioned on a mailpiece not having a match between the receiver location address indicator and the receiver forwarding address indicator.

50. A method as defined in Claim 49 further comprising the step of off-line processing wherein address indicator data is supplied manually for each mailpiece not having a match between the receiver location address indicator and the receiver forwarding address indicator, and wherein the address indicator is subsequently positioned on the corresponding mailpiece.

51. A method as defined in Claim 50 further comprising the step of positioning the generated and stored sender notification on a separate mailpiece for each of the plurality of mailpieces having positioned thereon a sender notification indicator and routing said separate mailpiece to the sender return address indicator.

52. A method for unified forwarding of mail and notifying sender, the method comprising the steps of:

electronically scanning a plurality of mailpieces and generating a corresponding single-scan image of receiver location address indicator and sender return address indicators;

searching for a match between each receiver location address indicator and a corresponding receiver

10 forwarding address indicator from among a set of
preselected receiver forwarding address indicators; and
labeling each mailpiece for which a match is
found between the receiver location address indicator
and one said preselected receiver forwarding address
15 indicator with a label formed by interposing the
receiver forwarding address indicator onto the single-
scan image.

53. A method as defined in Claim 52 further
comprising the step of saving each label having
interposed thereon the receiver forwarding address
indicator along with the receiver location address
5 indicator and sender return address indicator and
positioning the label on a separate mailpiece for
routing to the sender return address.

54. A method of routing mail to be returned
to sender and notifying sender of the reason for
return, the method comprising the steps of:

scanning each of a plurality of mailpieces
5 having receiver address location indicators and sender
return address location indicators positioned thereon
to generate a single-scan image of the address
indicators data;
separating the receiver location address
10 indicator data;
electronically comparing the address
indicator characters with a preselected list to
determine a match from a preselected set of return
indicators, each return indicator having an indicator
15 of the reason the corresponding mailpiece was not
deliverable; and

20

5